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| EXAMINER | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/729,800 | KANEKO ET AL. | |
| | Examiner | Art Unit | |
| | PETER CHOI | 3623 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15,17-28 and 36-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,17-28 and 36-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. The following is a **FINAL** office action upon examination of application number 09/729,800. Claims 1-15, 17-28, and 36-40 are pending in the application and have been examined on the merits discussed below.

### *Response to Amendment*

2. In the response filed December 8, 2008, Applicant amended claims 1, 5, 6, 7, 8, 12, 13, 14, 17, 21, 24, 27, 28, 36, 37, 38, 39 and 40. No new claims were presented for examination, nor were any claims canceled or withdrawn.

### *Response to Arguments*

3. Applicant's arguments with respect to the newly amended subject matter of claims 1, 8, 17, 28 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Specifically, Applicant argues that:

- there is no suggestion of establishing a demand-supply scheme by selecting, from among a first version of a supply chain and a second version of the supply chain in which a change is made in each demand-supply step thereof.
- there is no disclosure or teaching in Lilly et al. or Sellers et al. of creating a second a second version of the supply chain by making a change in each

demand-supply step thereof before selecting the first or second version having the highest profitability index.

4. Applicant's arguments filed December 8, 2008 have been fully considered but they are not persuasive.

Applicant argues that although it can be assumed that an entity using the Lilly et al. system desires to make a profit, achieving the highest profitability is not discussed nor is there disclosed any way of achieving it. Applicant argues that there is no motivation for replacing scheduling with profitability as the focus of Lilly et al.

The Examiner respectfully disagrees. Although Lilly et al. does not explicitly consider profitability, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Examiner asserts that Lilly et al. ***was not*** asserted as explicitly teaching the consideration of profitability. The Examiner points out that Sellers et al. was relied upon to provide the consideration of profitability in scheduling work orders.

Sellers et al. teaches the concept of a profitability index, calculated based on expected investment outlays, estimated operating cash flows, assumptions and cost estimates. Lilly et al. teaches the use of work orders (scheme data) to determine the best fit of operations based upon resource and material availability and received work orders. Additionally, Official Notice was taken, and subsequently admitted as prior art, that it is well known in for-profit businesses that increased profit is a primary business goal. The Examiner asserts that expected/estimated investments, cash flows and cost estimates are analogous to resource and material availability. The Examiner also asserts that use of a profitability index as a criterion for capital decision making and as an indicator of the "desirability" of a project is analogous to the step of determining the best fit of operations. The combined teachings of Sellers et al. and Lilly et al. therefore teach the step of calculating a profitability index based on scheme data regarding order receipt, order placement, purchase and supply.

Furthermore, although the parameters of Lilly et al. are directed more towards scheduling than profitability, the Examiner points out that profitability is not a parameter used in determining scheme data in the "third means for determining scheme data" in independent claims 1, 8,17, and 28. The profitability index of each demand-supply step is calculated based on the scheme, cost and time data in the "fourth means" of said independent claims. The Examiner also asserts that resource and material availability, parameters taught by Lilly et al., affect the ability to perform work, which, in turn, affects profitability. For example, if inadequate resources are allocated to perform a task, it

affects the ability of said task to be completed timely. The use of "lateness" penalties for failing to complete work timely is old and well known and would affect profitability. In another example, inadequate resource allocation may result in an inability to manufacture the quantity of a commodity specified by an order, which delays the time until the order can be fulfilled. The "lateness" penalties are deemed to be related towards cost and time; thus, the combined teachings of Lilly et al. and Sellers et al. are deemed to meet the limitation of the claim.

The Examiner also points out that Lilly et al. also teaches the step of changing parameters (resource capacity) of a scheme that affects profitability and goes to the step of determining the best fit for each work order by allocating resources to "maximize" scheme data that "best" suits the company (i.e., profitability) while complying to priority constraints. As previously asserted by the Examiner, Lilly et al. and Sellers et al. are both directed towards scheduling work orders in manufacturing processes. Combined with admitted prior art (a result of untimely/improperly challenged Official Notice) that increased profit is a primary business goal of for-profit businesses, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Lilly et al. to include a profitability index, and implementing the scheme yielding the maximum profitability index, because the resulting combination would obtain the benefits of the use of a profitability index as a financial analysis criterion for capital decision making and also as an indicator of the "desirability" of a project, which in turn are used in determining the optimal scheduling of work orders (as indicated by

the maximized profitability index), and subsequent selection of a profit maximizing strategy in alignment with the business' primary goal of increasing profit, thereby further enhancing the ability of Lilly et al. to determine the "best" fit based on the availability of resources and materials, which is a goal of Lilly et al. [Column 2, lines 41-44]. Additionally, the Examiner asserts that Lilly et al. repeats the step of assigning resource capacity as new work orders are entered in the system; Thus, Lilly et al. is continually finding the "best" fit based on changing parameters (i.e., resource capacity assigned to a specific work order). Thus, the Examiner deems the combination of Lilly et al., Sellers et al., and admitted prior art to meet the limitation of looking at the profitability of each demand-supply step in a given process and changing parameters thereof in order to vary the profitability index so that the steps with the best profitability indexes can be selected.

Further, as per Applicant's own admission, companies "desire to make a profit" (i.e., be profitable). Thus, applying this known "technique" or constraint to a known scheduling technique would yield predictable results. One of ordinary skill in the art would have recognized that applying the known technique of considering profitability when scheduling would have yielded predictable results and resulted in an improved system. It would have been recognized that applying the technique of considering profitability, as taught by Sellers et al., to the teachings of Lilly et al. would have yielded predictable results because the level of ordinary skill in the art demonstrated by the references applied shows the ability to consider such considerations when scheduling

an ideal schedule. Further, applying the concept of profitability to the scheduling process of Lilly et al. would have been recognized by those of ordinary skill in the art as resulting in an improved system that would allow the generation of work order schedules that are the "best fit" of available materials and resources while simultaneously considering the well known goal of being profitable.

***Official Notice***

5. Examiner notes that Applicant did not challenge the takings of Official Notice in the Office Action mailed October 4, 2005. The following facts/concepts have been admitted as prior art:

- Increased profit is a primary business goal of for-profit businesses
- The cost associated with manufacturing a product or subassembly would inherently include transportation or shipment costs for each step in a manufacturing process
- Applying financial analysis to part or all of a business process is a well known business strategy

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-4, 6-11, 13-15, 17-28, and 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilly et al. (U.S Patent #5,787,000) in view of Sellers et al. (U.S Patent #5,311,438) and Aram Sogomonian and Christopher Tang's "A Modeling Framework for Coordinating Promotion and Production Decisions Within a Firm" (reference 1-U, referred to herein as Sogomonian et al.).

As per claims 1, 8, 15, 17 and 28, Lilly teaches a demand-supply scheme planning apparatus comprising:

(a) first means for storing data regarding a cost and a time that are needed between a purchase step and a supply step of each demand-supply step of a supply chain, the supply chain including a plurality of demand-supply steps each having an order receipt step, an order placement step, a purchase step, and a supply step **(means for receiving data in a computer, the data including resource availability information for each resource used in the manufacturing process, material availability information for each material used in the manufacturing process, and work order information, which includes materials requirement information)** [Column 3, lines 31-38] that are related to a commodity **{Lilly et al. is directed towards providing a method and means for scheduling work orders for *manufacturing products* in a manufacturing process [Column 2, lines 33-35]. Lilly et al. defines a "work order" to be a request to *manufacturing one or more distinct parts* in a manufacturing facility *that may be consumed* either by the customer who ordered**

**the parts or by other work orders within the manufacturing facility, as in the case of a subassembly [Column 3, lines 50-54]. The Lilly et al. system is disclosed as being most useful in a facility for *manufacturing discrete products* [Column 4, lines 34-35]}**;

(b) second means for inputting an order receipt scheme of a demand-supply step of the plurality of demand-supply steps that is located at a supply-side terminal of the supply chain **(schedule all work orders that have been accepted by the manufacturer)** [Column 4, lines 39-44];

(c) third means for determining scheme data **(assigning resource capacity and a start date/time and a finish date/time to each operation)** regarding the order receipt step, the order placement step, the purchase step, and the supply step of each of the plurality of demand-supply steps based on the inputted order receipt scheme **(certain data required to schedule a work order is received in a computer, including resource availability information, material availability information, work order information, operations information, and material requirements information)** for each demand-supply step **{Lilly repeats the steps of assigning resource capacity and determining the best fit in the work order schedule for each operation}** [Column 2, lines 33-40, Column 4, lines 34-38, Column 5, line 24-Column 6, line 25]; and

(e) fifth means for making a change in a predetermined parameter **(in global scheduling mode, the system reschedules all previously entered work orders in order of priority each time a new work order is entered in the system; the**

**sequence in which work orders are scheduled ultimately determines the schedule; available capacity is assigned to the first work order in the sequence, any remaining capacity is assigned to the second work order in the sequence, and so on)** for varying the profitability index thereof **{Since the rescheduling work orders affects the priority and subsequent assignment of capacity, when work orders are rescheduled, the resource capacity assigned to each work order is changed; thus affecting the ability to perform the scheduled work timely, which in turn affects profitability}** [Column 9, lines 1-25].

It has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice that it is well known in for-profit business that increased profit is a primary business goal. The replacement of a scheme is contingent on the replacement scheme maximizing profitability, which suggests that, at the very least, the replacement scheme is more profitable (i.e., increases profit) than the scheme being replaced. Thus, the Examiner asserts that setting scheme data that maximizes profitability would be obviated, because replacing a base scheme with a new scheme that maximizes profitability would lead to increased profits.

The Examiner asserts that Lilly et al. evaluates and determines the “best” fit of operations for each work order based upon a plurality of constraints (resource and material availability), thus performing the step of “setting” scheme data that “best” (i.e., optimizes or maximizes) suits the business based upon resource and material

availability (i.e., variable parameters) [Column 2, lines 41-44], but does not explicitly teach:

(d) fourth means for calculating a profitability index of each demand-supply step of the supply chain based on the scheme data determined and the cost and time data stored by the first means;

(e) varying the profitability index of each demand-supply step, wherein the fourth means calculates a first profitability index for a first version of the supply chain before making said changes in the predetermined parameters, and calculates a second profitability index for a second version of the supply chain after making said changes in the predetermined parameters;

(f) sixth means for establishing a demand-supply scheme for manufacturing the commodity by selecting the first or the second calculated version of the supply chain having the highest profitability index.

However, Sellers et al. teaches a financial analysis means that include means for calculating a profitability index **(a basic financial parameter, such as the profitability index)** [Column 89, lines 7-8, Column 113, lines 46-48, Column 114, lines 15-16, 33-34].

Lilly et al. and Sellers et al. are both directed towards scheduling work orders in manufacturing processes. Combined with admitted prior art (a result of untimely/improperly challenged Official Notice) that increased profit is a primary

business goal of for-profit businesses, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Lilly et al. to include a profitability index, and implementing the scheme yielding the maximum profitability index, because the resulting combination would obtain the benefits of the use of a profitability index as a financial analysis criterion for capital decision making and also as an indicator of the "desirability" of a project, which in turn are used in determining the optimal scheduling of work orders (as indicated by the maximized profitability index), and subsequent selection of a profit maximizing strategy in alignment with the business' primary goal of increasing profit, thereby further enhancing the ability of Lilly et al. to determine the "best" fit based on the availability of resources and materials, which is a goal of Lilly et al. [Column 2, lines 41-44].

One of ordinary skill in the art would have recognized that applying the known technique of considering profitability when scheduling would have yielded predictable results and resulted in an improved system. It would have been recognized that applying the technique of considering profitability, as taught by Sellers et al., to the teachings of Lilly et al. would have yielded predictable results because the level of ordinary skill in the art demonstrated by the references applied shows the ability to consider such considerations when scheduling an ideal schedule. Further, applying the concept of profitability to the scheduling process of Lilly et al. would have been recognized by those of ordinary skill in the art as resulting in an improved system that would allow the generation of work order schedules that are the "best fit" of available

materials and resources while simultaneously considering the well known goal of being profitable.

Further, Sogomonian et al. teaches:

(e) varying the profitability index of each demand-supply step, wherein the fourth means calculates a first profitability index for a first version of the supply chain before making said changes in the predetermined parameters, and calculates a second profitability index for a second version of the supply chain after making said changes in the predetermined parameters **(to illustrate the benefits of considering those marketing/manufacturing decisions jointly, we compare the profit attainable by the integrated model to that of the baseline model) {page 193 discloses the variables used in the formula that models promotion and production, the formula being used for evaluating the change from period to period}** [page 192, Figure 2];

(f) sixth means for establishing a demand-supply scheme for manufacturing the commodity by selecting the first or the second calculated version of the supply chain having the highest profitability index **(For each of the models, we define a problem that finds an optimal promotion plan and an optimal production plan. The problem associated with the baseline model consists of two subproblems: the marketing subproblem and the manufacturing subproblem. The former subproblem determines an optimal promotion plan that maximizes the net revenue minus while the latter subproblem determines an optimal production plan that minimizes the net cost. In this case, the net profit associated with the**

**baseline model is obtained by net revenue minus the net cost; First, the marketing group determines a promotion plan so that the total net revenue is maximized. Given the promotion plan, the sales of the product is known. Then, the manufacturing group finds a production plan so that the total cost is minimized; we can conclude that problem (A) can be solved within $O(T^6K^2)$ operations. Hence, we can determine an optimal promotion-production plan for a centralized system within $O(T^6K^2)$ operations) {Figure 2 shows that the integrated model outperforms the baseline model and thus should be selected in order to enable the firm to obtain higher total net profit and lower inventory level than if the baseline model were used/selected}** [pages 192, 193, 199, Figure 2].

Sogomonian et al. is directed towards using an integrated model in which promotion and production decisions of a firm are considered jointly to evaluate and coordinate promotion and production decisions within a firm to determine optimal promotion and production decisions so that the total net profit is maximized. Lilly et al. and Sellers et al. are both directed towards scheduling work orders in manufacturing processes. Thus, Lilly et al., Sellers et al., and Sogomonian et al. are reasonably pertinent to each other and are analogous references. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Lilly et al. to include the steps of varying the predetermined parameter to create two versions of the supply chain having different profitability indexes and selecting the version with the highest profitability index, because doing so enhances the ability of Lilly

et al. to generate work order schedules that are the “best fit” of available materials and resources while simultaneously considering the well known goal of being profitable.

Further regarding claim 15, both Lilly et al. and Sellers et al. are computerized systems.

Lilly et al. meets the limitations of claims 17 and 28 by further teaching the steps of:

storing second data regarding a transportation cost involved in the shipment of the product and a time needed for transportation of the product **(lead time necessary to obtain an additional quantity of each material; period of time required to physically transfer the output units to the next succeeding operation, "transfer time")** [Column 5, lines 43-46, Column 6, lines 21-22];

storing third data regarding targets of stock of the product **(identity of each material used in the manufacturing process; identity of the resource(s) at which each operation is to be performed, the sequence in which the operations are to be performed)** and the member of each demand-supply step **(external resource may include outside vendors or service providers)** [Column 4, lines 1-7], each demand-supply step places an order for a product or a member for producing the product upon receiving an order for the product **(schedule all work orders that have been accepted by the manufacturer)** [Column 4, lines 39-44], and that ships the product purchased in accordance with the order placed or that produces and ships the product using the member purchased in accordance with the order placed **(The system may also be**

**used to determine a proposed delivery date for a potential work order in response to an inquiry from a customer or other interested person)** [Column 4, lines 41-44]; and

inputting stock records of the product **(resource and material availability information for each resource used in the manufacturing process, specifying the identity and quantity of each resource available)** and the member of each demand-supply step of the supply chain **(external resource may include outside vendors or service providers)** [Column 3, lines 31-35, Column 4, lines 1-7, Column 5, lines 31-53].

In addition, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the costs associated with manufacturing a product or subassembly would include transportation or shipment costs for each step in a manufacturing process. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include the step of including the transportation and shipments costs for each step in a manufacturing process, because doing so provides a more accurate analysis of expected costs when assessing profitability, further enabling the Lilly-Sellers combination to select the "best" fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 2, Lilly et al. teaches an apparatus according to claim 1, wherein the commodity includes a product and a part **(data required to schedule a work order is received in a computer, such as material availability information that includes the**

**identity of each material used in the manufacturing process and the quantity of each material available)** [Column 5, lines 43-54].

Claim 9 recites limitations already addressed by the rejection of claim 2 above; therefore, the same rejection applies.

As per claim 3, Lilly et al. teaches an apparatus according to claim 1, wherein the commodity includes a service **{insofar as the manufacturer is manufacturing and providing items requested in the work order to the customer}**.

Claim 10 recites limitations already addressed by the rejection of claim 3 above; therefore, the same rejection applies.

As per claim 4, Lilly et al. teaches an apparatus according to claim 1, wherein the third means determines an amount of order placement of the demand-supply step, based on at least an amount of order receipt, an amount of stock, and a target amount of stock of the demand-supply step **(material availability information includes the identity and quantity of each material used in the manufacturing process; work order information includes the identity and quantity of the part to be manufactured; material requirements information includes the identity and quantity of materials needed for an operation, the various quantity expressions are reduced to a specific quantity of the part which is required; material**

**availability is expressed in terms of supply and demand for each material used in the manufacturing process)** [Column 5, lines 43-67, Column 6, lines 50-54, Column 8, lines 32-47].

Claim 11 recites limitations already addressed by the rejection of claim 4 above; therefore, the same rejection applies.

As per claim 6, Lilly et al. teaches an apparatus according to claim 1, wherein the first means further stores data regarding an order-receivable amount of each demand-supply step **(scheduling work order for manufacturing products in a manufacturing process, wherein each operation in the work order is assigned resource capacity, a start and finish date/time based upon the resource and material requirements of the operation and the availability of the resource capacity and materials in the manufacturing facility)**, and the fifth means changes a parameter regarding order receipt **(in global scheduling mode, the system reschedules all previously entered work orders in order of priority each time a new work order is entered in the system; the sequence in which work orders are scheduled ultimately determines the schedule; available capacity is assigned to the first work order in the sequence, any remaining capacity is assigned to the second work order in the sequence, and so on)**, as one of the predetermined parameter, within the order-receivable amount [Column 2, lines 33-40, Column 9, lines 1-25].

Claim 13 recites limitations already addressed by the rejection of claim 6 above; therefore, the same rejection applies.

As per claim 7, Lilly et al. teaches an apparatus according to claim 1, wherein the fifth means changes a parameter that sets a starting timing of the order placement step **(in global scheduling mode, the system reschedules all previously entered work orders in order of priority each time a new work order is entered in the system; the sequence in which work orders are scheduled ultimately determines the schedule; available capacity is assigned to the first work order in the sequence, any remaining capacity is assigned to the second work order in the sequence, and so on)** [Column 9, lines 1-25].

Claim 14 recites limitations already addressed by the rejection of claim 7 above; therefore, the same rejection applies.

As per claim 18, Lilly et al. teaches an apparatus according to claim 17, wherein the fifth means determines a deviation between a value obtained by subtracting the order receipt scheme of the demand-supply step located at the shipment-side terminal from the stock record of the demand-supply step and the stock target value of the demand-supply step **(material availability is determined by netting the demand and supply lists),** as an amount of order placement, and distributing the amount of order

placement as order placement to a demand-supply step where the order placement from the demand-supply step at the shipment-side terminal is possible **(if the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 8, lines 38-47, 51-58, Column 11, lines 24-35, Column 12, lines 16-34].

Neither Lilly et al. nor Sellers et al. explicitly teaches the step of distributing order placement in a manner that profit increases. However, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the primary business goal of for-business organizations is to increase profits, thereby obviating the step of taking cost and time considerations of work orders into consideration when ordering additional quantities of supplies/parts/materials. Therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include the step of distributing orders so that profit increases, because doing so further enhances the ability of Lilly et al. to determine the "best" fit based on the availability of resources and materials, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 19, Lilly et al. teaches an apparatus according to claim 17, further comprising:

(a) sixth means for setting an order receivable range of each demand-supply step based on a fourth data regarding a product order receivable range of each

demand-supply step stored in data stored by the first means **(work order information includes the release date (when work should commence) and want date (when work must be complete) for the work order)** [Column 5, lines 55-57]; and

(b) seventh means for determining appropriateness of each demand-supply step based on the order receivable range set by the sixth means and the order receipt of each demand-supply step set by the fifth means **(in the global scheduling mode, all work orders in the system are rescheduled in the order of (1) work order want date, if no work order priority is specified; or (2) work order priority and want date within the same priority level, if a work order priority is specified)** [Column 9, lines 15-19].

As per claim 20, Lilly et al. teaches an apparatus according to claim 19, wherein the seventh means determines whether a processing capability of each demand-supply step is excess or insufficient **(user specifies the resource capacity that is required to perform a particular operation, specifying a minimum and/or maximum resource capacity; if the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 7, lines 26-31, Column 8, lines 38-47, 51-58].

As per claim 21, Lilly et al. teaches an apparatus according to claim 17, further comprising:

(a) sixth means for setting an order receivable range of each demand-supply step based on a fourth data regarding a product order receivable range of each demand-supply step stored in data stored by the first means **(work order information includes the release date (when work should commence) and want date (when work must be complete) for the work order)** [Column 5, lines 55-57];

(b) seventh means for determining whether the order receipt of each demand-supply step set by the fifth means is within the order receivable range set for the corresponding demand-supply step by the sixth means **(if the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time)** [Column 8, lines 63-67, Column 12, lines 16-34]; and

(c) eighth means for, if the seventh means determines that the order receipt is not within the order receivable range, changing the schema data set by the fifth means so that the order receipt of the demand-supply step subjected to the determination becomes within the corresponding order receivable range **(if the lead time is greater than the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time)** [Column 8, lines 60-63, Column 12, lines 16-34].

As per claim 22, Lilly et al. teaches an apparatus according to claim 21, wherein the eighth means switches a portion or a whole amount of the order receipt of the

demand-supply step subjected to the determination to order receipt of a demand-supply step that is capable of shipping a product identical to that shipped by the demand-supply step subjected to the determination **(If the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time. If, on the other hand, the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time)** [Column 8, lines 60-67, Column 12, lines 16-34].

As per claim 23, Lilly et al. teaches an apparatus according to claim 21, wherein the seventh means changes, in time, at least an amount of the order receipt of the demand-supply step subjected to the determination relative to the order receipt scheme **(If the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time. If, on the other hand, the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start**

**date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time)** [Column 8, lines 60-67, Column 12, lines 16-34].

As per claim 24, Lilly et al. teaches an apparatus according to claim 23, wherein the seventh means determines whether a sum of the changed order receipt and the order receipt set by the fifth means is within the order receivable range set by the sixth means, if the eighth means accomplishes order receipt changing, in time, at least an amount of the order receipt **(If the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time. If, on the other hand, the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time)** [Column 8, lines 60-67, Column 12, lines 16-34].

As per claim 25, Lilly et al. teaches an apparatus according to claim 21, wherein the eighth means changes at least a portion of the third data of each demand-supply step stored by the first means **(material availability information is updated each time that an operation is scheduled by the system in order to reflect the material**

**demand in the time period the material is needed for the scheduled operation)** [Column 5, lines 48-52].

As per claim 26, Lilly et al. teaches an apparatus according to claim 21, wherein the eighth means changes the scheme data so that the order receipt of each demand-supply step becomes within the corresponding order receivable range **(if the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time; user specifies the resource capacity that is required to perform a particular operation, specifying a minimum and/or maximum resource capacity; if the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 7, lines 26-31, Column 8, lines 38-47, 51-58, 63-67, Column 11, lines 24-35, Column 12, lines 16-34].

Neither Lilly et al. nor Sellers et al. explicitly teaches the step of changing scheme data for the purposes of increasing the profitability index. However, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the primary business goal of for-business organizations is to increase profits, thereby obviating the step of taking cost and time considerations of work orders into consideration when ordering additional quantities of supplies/parts/materials and

scheduling work orders for completion/production. Thus, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include the step of changing scheme data to yield an increased profitability index, because doing so would update the availability of resources and materials, further enhancing the ability of Lilly et al. to determine the "best" fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 27, Lilly et al. teaches an apparatus according to claim 17, further comprising output means for outputting the scheme data set by the fifth means **(means for displaying on a computer screen the assigned resource capacity, assigned start and finish date/time for each operation in a graphical format)** [Column 3, lines 43-47].

As per claim 36, Lilly et al. teaches an apparatus according to claim 1, further comprising an adjustment means for adjusting a distribution of the scheme data regarding the order receipt step, the order placement step, the purchase step and the supply step for each of the plurality of demand-supply steps **(if the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time; user specifies the resource capacity that is required to perform a particular operation, specifying a minimum and/or maximum resource capacity; if**

**the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 7, lines 26-31, Column 8, lines 38-47, 51-58, 63-67, Column 11, lines 24-35, Column 12, lines 16-34].

Neither Lilly et al. nor Sellers et al. explicitly teaches the step of adjusting scheme data so that the profitability index increase. However, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the primary business goal of for-business organizations is to increase profits, thereby obviating the step of taking cost and time considerations of work orders into consideration when ordering additional quantities of supplies/parts/materials and scheduling work orders for completion/production. Therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include the step of adjusting scheme data so that the profitability index increases, because doing so would update the availability of resources and materials, further enhancing the ability of Lilly et al. to determine the "best" fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 37, Lilly et al. teaches a program according to claim 8, further comprising the step of adjusting a distribution of the scheme data regarding the order receipt step, the order placement step, the purchase step and the supply step for each of the plurality of demand-supply steps **(if the lead time is less than or equal to the**

**difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time; user specifies the resource capacity that is required to perform a particular operation, specifying a minimum and/or maximum resource capacity; if the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 7, lines 26-31, Column 8, lines 38-47, 51-58, 63-67, Column 11, lines 24-35, Column 12, lines 16-34].

Neither Lilly et al. nor Sellers et al. explicitly teaches the step of adjusting scheme data so that the profitability index increases. However, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the primary business goal of for-business organizations is to increase profits, thereby obviating the step of taking cost and time considerations of work orders into consideration when ordering additional quantities of supplies/parts/materials and scheduling work orders for completion/production. Therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include the step of adjusting scheme data so that the profitability index increases, because doing so would update the availability of resources and materials, further enhancing the ability of Lilly et al. to determine the “best” fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 38, Lilly et al. teaches an apparatus according to claim 17, wherein said fifth means adjusts the scheme data regarding order receipt, order placement, purchase and shipment of each demand-supply step **(if the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time; user specifies the resource capacity that is required to perform a particular operation, specifying a minimum and/or maximum resource capacity; if the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 7, lines 26-31, Column 8, lines 38-47, 51-58, 63-67, Column 11, lines 24-35, Column 12, lines 16-34].

Neither Lilly et al. nor Sellers et al. explicitly teaches the step of adjusting scheme data so that the profitability index increases. However, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the primary business goal of for-business organizations is to increase profits, thereby obviating the step of taking cost and time considerations of work orders into consideration when ordering additional quantities of supplies/parts/materials and scheduling work orders for completion/production. Therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers

combination to include the step of adjusting scheme data so that the profitability index increases, because doing so would update the availability of resources and materials, further enhancing the ability of Lilly et al. to determine the "best" fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 39, Lilly et al. teaches a program according to claim 28, further including the step of adjusting the scheme data regarding order receipt, order placement, purchase and shipment of each demand-supply step **(if the lead time is less than or equal to the difference between the current date/time and the proposed start date/time, then the system adds the excess to the proposed start date/time to determine the start date/time, then the operation is scheduled for the proposed start date/time; user specifies the resource capacity that is required to perform a particular operation, specifying a minimum and/or maximum resource capacity; if the quantity of the material(s) available on the proposed start date/time does not satisfy the material requirement for the operation, then additional material must be obtained)** [Column 7, lines 26-31, Column 8, lines 38-47, 51-58, 63-67, Column 11, lines 24-35, Column 12, lines 16-34].

Neither Lilly et al. nor Sellers et al. explicitly teaches the step of adjusting scheme data so that the profitability index increase. However, it has been admitted as prior art, as a result of untimely/improperly challenged Official Notice, that the primary business goal of for-business organizations is to increase profits, thereby obviating the

step of taking cost and time considerations of work orders into consideration when ordering additional quantities of supplies/parts/materials and scheduling work orders for completion/production. Therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include the step of adjusting scheme data so that the profitability index increases, because doing so would update the availability of resources and materials, further enhancing the ability of Lilly et al. to determine the "best" fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

As per claim 40, Lilly et al. teaches a supply chain distribution scheme planning apparatus comprising:

(a) a data storage portion that stores parameters for a plurality of demand-supply steps in a supply chain, wherein each demand-supply step includes an order receipt step, an order placement step, a purchase step, and a supply step **(means for receiving data in a computer, the data including resource availability information for each resource used in the manufacturing process, material availability information for each material used in the manufacturing process, and work order information, which includes materials requirement information)** [Column 3, lines 31-38];

(b) a data input portion for inputting an order quantity **(means for receiving data in a computer, the data including resource availability information for each resource used in the manufacturing process, material availability information for**

**each material used in the manufacturing process, and work order information, which includes materials requirement information)** [Column 3, lines 31-38];

(c) a supply chain distribution scheme determining portion that determines a basic scheme for the order receipt step, order placement step, purchase step and supply step of each demand-supply step **(assigning resource capacity and a start date/time and a finish date/time to each operation)** in accordance with the order quantity and at least one stored parameter **(certain data required to schedule a work order is received in a computer, including resource availability information, material availability information, work order information, operations information, and material requirements information)**, and determines a supply chain distribution scheme by distributing the order quantity among the plurality of demand-supply steps, based on the basic scheme of each demand-supply step **(determine best fit of the operations of each work order in the schedule based upon resource and material availability)** for each demand-supply step **{Lilly repeats the steps of assigning resource capacity and determining the best fit in the work order schedule for each operation}** [Column 2, lines 33-40, Column 4, lines 34-38, Column 5, line 24-Column 6, line 25];

(e) a basic scheme adjusting portion that adjusts the parameters of each demand-supply, as determined by the supply chain distribution scheme determining portion, to adjust the profitability index of the supply chain distribution scheme **(in global scheduling mode, the system reschedules all previously entered work orders in order of priority each time a new work order is entered in the system;**

**the sequence in which work orders are scheduled ultimately determines the schedule; available capacity is assigned to the first work order in the sequence, any remaining capacity is assigned to the second work order in the sequence, and so on)** for varying the profitability index thereof **{Since the rescheduling work orders affects the priority and subsequent assignment of capacity, when work orders are rescheduled, the resource capacity assigned to each work order is changed; thus affecting the ability to perform the scheduled work timely, which in turn affects profitability}** [Column 9, lines 1-25].

The Examiner asserts that Lilly et al. evaluates and determines the "best" (i.e., optimal) fit of operations for each work order based upon a plurality of constraints (resource and material availability), thus performing the step of "setting" scheme data that "best" (i.e., optimizes or maximizes) suits the business based upon resource and material availability (i.e., variable parameters) [Column 2, lines 41-44], but does not explicitly teach:

(d) an index calculating portion that calculates a profitability index of the supply chain distribution scheme based on the basic scheme determined by the supply chain distribution scheme determining portion for each demand-supply step within the supply chain; and

(f) selecting the combination of demand-supply steps that yield the supply chain distribution scheme having the highest profitability index.

However, Sellers et al. teaches a financial analysis means that include means for calculating a profitability index of a "scheme" **(a basic financial parameter, such as the profitability index)** [Column 89, lines 7-8, Column 113, lines 46-48, Column 114, lines 15-16, 33-34].

Further, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice that it is well known in for-profit business that increased profit is a primary business goal. The replacement of a scheme is contingent on the replacement scheme maximizing profitability, which suggests that, at the very least, the replacement scheme is more profitable (i.e., increases profit) than the scheme being replaced. Thus, the Examiner asserts that setting scheme data that maximizes profitability would be obviated, because replacing a base scheme with a new scheme that maximizes profitability would lead to increased profits.

Lilly et al. and Sellers et al. are both directed towards scheduling work orders in manufacturing processes. Combined with admitted prior art (a result of untimely/improperly challenged Official Notice) that increased profit is a primary business goal of for-profit businesses, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Lilly et al. to include a profitability index, and implementing the scheme yielding the maximum profitability index, because the resulting combination would obtain the benefits of the use of a profitability index as a financial analysis criterion for capital decision making and also as

an indicator of the "desirability" of a project, which in turn are used in determining the optimal scheduling of work orders (as indicated by the maximized profitability index), and subsequent selection of a profit maximizing strategy in alignment with the business' primary goal of increasing profit, thereby further enhancing the ability of Lilly et al. to determine the "best" fit based on the availability of resources and materials, which is a goal of Lilly et al. [Column 2, lines 41-44].

One of ordinary skill in the art would have recognized that applying the known technique of considering profitability when scheduling would have yielded predictable results and resulted in an improved system. It would have been recognized that applying the technique of considering profitability, as taught by Sellers et al., to the teachings of Lilly et al. would have yielded predictable results because the level of ordinary skill in the art demonstrated by the references applied shows the ability to consider such considerations when scheduling an ideal schedule. Further, applying the concept of profitability to the scheduling process of Lilly et al. would have been recognized by those of ordinary skill in the art as resulting in an improved system that would allow the generation of work order schedules that are the "best fit" of available materials and resources while simultaneously considering the well known goal of being profitable.

8. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilly et al. (U.S Patent #5,787,000) in view of Sellers et al. (U.S Patent #5,311,438) and

Sogomonian et al. as applied to claims 4 and 11 above, and further in view of Edstrom et al. (U.S Patent #5,233,533).

As per claim 5, neither Lilly et al., Sellers et al., nor Sogomonian et al. explicitly teaches an apparatus according to claim 4, wherein the parameter includes the target amount of stock, and the fifth means changes the target amount of stock.

However, Edstrom et al. teaches an allocation of inventory so as to determine a target amount **(daily target amount of "stock")**, enabling a net available amount per day, from which a manufacturing or purchasing order is generated for materials not available. [Column 14, line 62 – Column 15, line 6].

Similar to Lilly et al., Sellers et al. and Sogomonian et al., Edstrom et al. is also directed towards scheduling the manufacture of items. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Lilly-Sellers combination to include target stock as a parameter that is changed when determining the scheme that maximizes the profitability index, such as suggested by Edstrom et al.'s daily computation of the available stock amount, in order to ensure that the stock amount is not below a desired level based on projected or historical work order information, further updating the availability of resources and materials, and enhancing the ability of Lilly et al. to determine the "best" fit, which is a goal of Lilly et al. [Column 2, lines 41-44].

Claim 12 recites limitations already addressed by the rejection of claim 5 above; therefore, the same rejection applies.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cherneff et al. (US Patent #6,233,493) teaches a computer-implemented product development planning method that used a genetic algorithm and a constraint engine to construct candidate product portfolios and schedules. Each schedule is evaluated and used to generate an "improved" candidate portfolio in accordance with genetic processing. This process continues to improve the product prioritization and pipeline schedule as measured in terms of an objective criterion such as profit maximization.

Arifovic's "Genetic Algorithm Learning and the Cobweb Model" (reference 1-V) discusses the cobweb model in which competitive firms use a genetic algorithm to update their decision rules about next-period production and sales.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHOI whose telephone number is (571)272-6971. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beth Boswell can be reached on (571) 272-6737. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 23, 2009

/P. C./
Examiner, Art Unit 3623

/Jonathan G. Sterrett/
Primary Examiner, Art Unit 3623